Learning Management System Performance Improvement Intervention

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Executive Summary

Florida State College prides itself as a technological leader providing superior access to the resources of scholarship. Administration and faculty are increasingly using learning management systems (LMS) to develop, organize and manage college courses from a virtual learning environment. One of our greatest problems has been maintenance downtime on Blackboard, the LMS our school has been using. Additionally, the system is hard for students and faculty to use, update and manage, and Blackboard requires expensive servers to be maintained by our staff. As a college with over 80,000 students, it is essential for us to meet our college mission of providing flexibility in the delivery of courses and advanced instructional technology (Florida State College at Jacksonville, n.d.). I recommend the migration to an alternative solution to meet our LMS needs.

Canvas LMS, designed by Instructure, offers an open-source, cloud-based architecture that provides the highest rated system on the market. The college currently pays extra for mobile applications, web conferencing, and other applications that are all included in Canvas. The college also pays for all training with Blackboard and must continually update and maintain our servers. For approximately $10,000, Florida State College can run a one-year trial of Canvas with administrator and end user support training, and premium support for 400 users all included. This is a low-risk adoption that has the potential to improve on our values and missions collegewide.

**Learning Management System Performance Improvement Intervention**

**Florida State College**

**Problem Summary**

Administration and faculty are increasingly using learning management systems (LMS) to develop, organize and manage college courses from a virtual learning environment. One of our greatest problems has been maintenance downtime on Blackboard, the LMS our school has adopted. Maintenance is critical, but it causes chaos when we have to take Blackboard offline during a term. It would be exorbitantly expensive for us to have a shadow system to keep up during maintenance. We need a solution to keep our LMS accessible throughout the year and minimize the downtime.

**Background of Organization**

Florida State College was established in 1965 as Florida Junior College. The college is located in Jacksonville, Florida and Provides high quality, affordable and relevant degree, career, and community education to Northeast Florida (Florida State College at Jacksonville, n.d.). There are currently over 80,00 students enrolled at Florida State College. The information technology department prides itself as a technological leader providing superior access to the resources of scholarship. The website for the college is [www.fscj.edu](http://www.fscj.edu), and the website for information technology is [www.fscj.edu/techteam/](http://www.fscj.edu/techteam/). Information about enrollment, state appropriations for operating expenses, rankings, credentials and academic programs can be found at <http://www.fscj.edu/district/about/index.php>.

**Stakeholders and Decision-Makers**

The people affected by my plan are the teachers, the students, the informational technology department, program managers, deans, and the president of the college. The people who are able to make the decisions to implement the plan are members of [Florida State College Technology Team](http://www.fscj.edu/techteam/staff):

* Chief Information Officer and Vice President: Dr. Rob Rennie
* Director of Learning Innovations: Trever Brolliar
* Software Engineer for LMS: David Dial

Dr. Rennie will have to approve the plan. Trever Brolliar will implement the plan. David Dial will be the engineer with insight on the performance that I will propose for the intervention. Many faculty and students can also be interviewed about the current problem, and possible future solutions.

**Performance Gap: Cause Analysis**

**Actual Current Performance.** The LMS used at Florida State College crashes constantly and is regularly taken offline for scheduled maintenance. Relating to the mission and goals of our institution, we state that we ensure every student has a positive experience by providing innovation and flexibility in course delivery, and we ensure advanced academic technology. Our many attempts at offering both hybrid and distance education courses through our LMS have failed due to the inability to keep our LMS working consistently.

**Desired Performance.** The desired performance is that the LMS is always running, and rarely taken offline.

**Performance Gap.** The existing performance gap is between where we are now, running an on-again off-again LMS, and our desired performance of a LMS that is always running.

**Cause Analysis.** The performance gap exists due to the environment that was created for our technology team. The school bought an LMS shell that our previously trained technology team could manage, update, and fix when problems arose. The company that created the LMS kept evolving, and our technology team was no longer trained to handle the changes. The company starting offering services to manage the LMS at a cost our institution could not pay. Our technology team received some training to stay afloat, yet we are nowhere near where we need to be with the technology. Additionally, our entire system is housed on one server, which constantly needs upgrading and service. When it is down, our LMS is down. Based on the cause-analysis, the technology team does not have the resources for backup servers to transfer the downtime, or the resources to offer the proper training on the LMS. Individuals do not have the necessary knowledge, but do have the capacity to learn when given the opportunity.

**Organizational History and Background**

**Goals.** Our college-wide goals include preparing students for distinctive success in their academic, career and personal goals through collaboration within the college community (Florida State College at Jacksonville, n.d.). Other goals include optimizing access to college programs and services, as well as providing students with an extraordinary positive experience in every engagement with the college. We struggle to meet all three of these goals when our academic communication avenues are cut off by downtime.

**History.** Florida State College started as a community college in 1965 with 2,610 students, primarily offering associate degrees. In 2007, we expanded to offer bachelor degrees, and we now have over 80,000 students enrolled.

**Mission and Vision.**  Our mission is to provide access to high quality, relevant, and affordable education to enhance the lives of our students and the economic development of Northeast Florida (Florida State College at Jacksonville, n.d.). We are a value-driven institution ensuring every student has a positive experience by providing innovation and flexibility in the delivery of courses and services, advanced academic technology, and many other services. These two values directly rely on the abilities of our LMS, and dependency of the system.

**Three Intervention Strategies**

The key to maintaining our LMS rests in the ability to update, work on, and fix the system while never taking the system offline. A practical way of ensuring limited downtime is to backup the entire system, so while the main system is offline, the backup system takes over. New companies are constantly introducing new LMS solutions, while established LMS companies are constantly updating. Listed are three solutions worth considering with regard to making the transition to a more stable solution. The low-end intervention and the high-end intervention require switching to a new LMS, but the advantages include cloud-based servers, which happens to be our biggest concern. The middle-end intervention allows us to build onto the system we already have, but will require future upgrades. As a college of 80,000 plus students, it is in the best interest of the Florida State College and our students to invest in Canvas.

**Low end intervention.** OpenClass has the potential to be a low-cost strategy that would meet the minimum needs to solve the performance gap, but may not be sustainable beyond an initial period of implementation. Pearson developed the LMS as a free alternative to Blackboard, Moodle, Angel, and other systems. OpenClass would require our technology team to import data from our current Blackboard system, and could be completed for approximately $5,000. The highlight of OpenClass is that it uses a cloud-based architecture that allows upgrades in real-time with no downtime or interruptions. The negative is that OpenClass is still in its Beta phase, and does not offer a dependable long-term solution.

**Middle end intervention.** A medium-cost strategy that would resolve the performance gap over several years’ time would be to increase our own server space to allow for dual servers to run the current Blackboard system. We could increase our server by 100 terabytes for approximately $25,000. This would allow the college to switch the volumes being used from one batch of servers to another while updates and repairs were administered. This would allow for a system that only requires minutes of downtime to switch servers. The negative effect of this plan is that the additional servers will eventually fill up and need upgrading down the line.

**High end intervention.** The high-cost strategy that offers the most stability and flexibility in the future is purchasing a new learning management system. Canvas, designed by Instructure, offers an open-source, cloud-based architecture that provides the highest rated system on the market. The high cost of the system is offset by the limited time needed for integration to the new system, and limited needed support. The college currently pays extra for mobile applications, web conferencing, and other applications that are all included in Canvas. For approximately $50,000, Florida State College could switch to the cloud-based Canvas, and never need to come offline again. This intervention best meets the human performance solution to the performance gap. The cloud-based storage system frees up our servers and keeps our server demands low. The negative in the system is the high price point.

**Justification for Intervention Strategy**

After careful consideration, I propose the adoption of Canvas as Florida State College’s new learning management system. As a college with over 80,000 students, it is essential for us to meet our college mission of providing flexibility in the delivery of courses and advanced instructional technology (Florida State College at Jacksonville, n.d.). Our lead software engineer for LMS, David Dial (personal communication, April, 18 2012) supported this strategy for the adoption of Canvas due to the ease of use for faculty and the cloud-based architecture. The low-end strategy of OpenClass lacks the dependability, reliability, and support we need. The medium-end strategy of adding servers to support Blackboard is a great short-term solution that poses long-term problems. Although it is expensive, Canvas is the only long-term solution that offers the stability familiar to the students at Florida State College.

The low-end strategy of switching to OpenClass would give our Florida State College a cloud-based LMS, which could alleviate our server downtime. The current state of OpenClass, in Beta testing, does not support a lot of the features and functions teachers regularly depend on in their LMS. The system does support integration with all of Google’s tools, but does not provide an easy way to connect presentation material with assignments, rubrics, and grading. You cannot export your class material to use again, and numerous reviews have expressed negativity based on how buggy and non-intuitive the software is. When instructors have problems using new software, they give up quickly, and we cannot afford minimal adoption.

For the faculty, the easiest transition would be the medium-level strategy to keep Blackboard as our LMS and increase our servers to create a complete backup of our system. This is a high price to pay considering how often we will have to increase our servers and our real estate to accommodate the new servers. The software is not easy to maintain, and our technology team is often overloaded trying to keep the LMS in service. Students often have a hard time logging in and navigating through the system, and faculty members have a hard time finding out how to do the simple things needed for their courses. This may be the easiest transition, but not the most effective.

The high-end strategy of adopting Canvas is pricey, but effective. To fulfill the goals of the college, of providing flexibility of course delivery and advanced instructional technology, our technology team is in charge of bringing 80,000 students online through one LMS. A team of professionals, determined to fix everything that is wrong with other learning management systems, designed canvas. It was created for ease of use, no downtime, mobile integration, and enhanced security. The technology team would not be responsible for managing the software hosted on the cloud. Canvas uses drag and drop technology, so users do not struggle to perform basic tasks. The ease of use and dependability of Canvas support the decision behind this strategy.

**The Manager’s Many Roles**

**Project management techniques.** As the project manager for this intervention strategy, I will be responsible for working with the college to establish the outcome, budget, and timeline for completing the project. Project managers work with clients developing a structure to govern the project, and break the project down into tasks (Januszeski & Molenda, 2008). Working with administration, I will come up with our plan and timeline, and assign members of our technology team to individual tasks to complete. We will purchase the software, and members of the technology team will be trained for the adoption. After this training, they will prepare for teaching the faculty how to use the new system. I will manage the training and timeline for adoption all while conforming to the proposed budget.

**Resource management techniques.** Finances, personnel, computers and software are the resources that will be used for this intervention. The finances must be approved by our vice president, Rob Rennie, and tracked by our program coordinator, Lillie Hookfin. The director of learning innovations, Trever Brollier, will track personnel, including the technology team responsible for training. Our lead software engineer, David Dial, will track computers and software.

**Delivery system management techniques.** The delivery system that will be used for this intervention will include computers and software to deliver the new LMS. Managing these resources includes overseeing the delivery system and the process use to deliver a product (Januszewski & Molenda, 2008). The LMS software is accessible online, from any computer on our campuses. Teachers will be trained through online tutorials and face-to-face workshops. Students will be given brief tutorials during their first week of courses similar to the tutorials they already receive for Blackboard. Faculty and students will use the new system for all of their courses going forward.

**Information management techniques.** Information management for the LMS will take place within the Canvas cloud-based architecture. Course statistics, including student and faculty usage and file storage, will be stored on the site. The faculty and technology team will have access to this information and more through Canvas “Environments” statistics pages. The Canvas statistics will provide an ongoing evaluation of usage through the integration. Students and faculty will assess the LMS using online surveys. The administration and the technology team will be able to subsequently access the surveys. The evaluation will be processed and forwarded to all parties, including Canvas technology support.

**The Manager as Change Agent**

An important role of every manager is that of a change agent. Rosett (Laureate Education, Inc., 2010) stated that, as change agents, managers should perform multi-sourced analysis to give birth to solution systems. Rogers (2003) described change agents as individuals who influence clients’ innovation decisions. As a change agent, influencing the decisions of our college, I have identified a performance gap and determined the best possible solution to meet the needs of the college.

**Financial and Budget Information.** The tentative budget for phase one of the intervention strategy of switching the colleges LMS to Canvas by Instructure will cost $10,000. This cost is for the trial integration of the program, which includes unlimited course integration up to 400 students. This one time cost includes free training and support for every year of service. To migrate the remainder of our Bachelors degree seeking students will cost the college $13 per student, per year. For a total cost of $56,800, all 4,000 of our Bachelors degree-seeking students could be migrated to Canvas (see Appendix A for budget details). The college could also spend under $300,000 per year for complete collegewide integration. There would be no additional personnel, technology, training, or support costs associated with the migration. Pricing is customized to meet the individual needs of each institution, and can be requested at <http://www.instructure.com/>. Free training and support can be found at <http://guides.instructure.com/>.

**Project Assessment.** Project objectives will be evaluated to measure the effectiveness through pre and post surveys of students and faculty, as well as metrics of student success, participation and interaction. The formative evaluation will include collecting assessment data form faculty and students regarding the use of Canvas (see Appendix B). This evidence will be used to make adjustments in the use of Canvas during ongoing and future instruction. Summative evaluation will take place using post migration surveys compared to pre-migration surveys completed by instructors and students (see Appendix C). Student participation will be metered and compared to overall student success (see Appendix D for budget and assessments interviews with technology staff at FSCJ).

References:

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Appendix A

Canvas Migration Budget Information

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| **Canvas Service** | **Individual** | **Cost** |
| Trial for 400 students |  | $10,000 |
| Additional students | $13/student (3600 students) | $46,800 |
| URL canvas.fscj.edu |  | $1,500 |
| Training |  | $0 |
| Support |  | $0 |
| **Total** |  | $58,300 |
|  |  |  |
| Entire school, possible future consideration | $13/student (20,000 enrolled) | $260,000 |

Costs were obtained from:

[Washington State Board for Community & Technical Colleges LMS Evaluation](http://sbctc.edu/college/dl/LMS_RFP_Scoring_Summary_Memo.pdf),

and

[LMS Comparisons](https://docs.google.com/spreadsheet/ccc?key=0AulCCxhcWFt_dDl5WW9URExaY1pib2ZlcGZ5OXdhelE&hl=en_US#gid=0).

Cost specific to our college were obtained via email with Kelly Thomas (personal communication, May 9, 2012) the Director of Technology Administration, at Florida State College at Jacksonville.

Appendix B

Formative Evaluation Survey Instrument

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| **Formative Assessment** |
| Is the platform appropriate for learning and training goals? |
| Does the platform provide an environment that promotes learner-teacher interaction? |
| Are the directions and terms clear? |
| Is the interface (eg. buttons, icons) designed to accommodate easy access by anyone? |
| Is the process of exchanging data and information with other systems easy? |
| Can learners easily approach the information that they want to get? |
| Can instructors upload learning materials easily? |
| Can learners print out learning materials easily? |
| Can the course be opened and altered comfortably? |
| Does the LMS facilitate interaction between the learner and learning contents? |
| Can the LMS store and maintain test results? |
| Are test results easily provided? |
| Can users communicate synchronously? |
| Does the LMS provide newsgroup functions for sharing news and holding discussions? |
| Does the LMS provide users with information to facilitate face-to-face interaction? |
| Does the LMS let users know that email has arrived? |
| Does the LMS store reports of learners’ activities? |
| Can users search for and find the online help that they want? |
| Does the platform promote interaction among learners? |
| Does the platform promote cooperative learning? |
| Does the LMS provide space where learners can ask questions regarding learning materials? |
| Can instructors simultaneously communicate with several learners easily? |

Formative Assessment instrument referenced from:

Kim, S. W., & Lee, M. G. (2008). Validation of an evaluation model for learning management

systems. *Journal Of Computer Assisted Learning, 24*(4), 284-294. doi:10.1111/j.1365-2729.2007.00260.x

Appendix C

Summative Evaluation Survey Instrument

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| **Summative Assessment - Quantitative** |
| Navigation (1-Difficult to 5-Easy) |
| Tasks were straightforward (1-Never to 5-Always) |
| Location in tool apparent (1-Never to 5-Always) |
| Understanding information and instructions (1-Hard to 5- Easy) |
| Information organization (1-Confusing to 5-Clear) |
| This tool was (1-Frustrating to 5-Satisfying) |
| This tool was (1-Hard to use to 5-Easy to use) |
| This tool was (1-Slow to 5-Fast) |
| This tool was (1-The worst ever to 5-The best ever) |
| If Canvas were continued at college (1-I would be last to use it to 5-I would be first to use it) |
| **Average score:** |

|  |
| --- |
| **Summative Assessment Qualitative** |
| How did you use Canvas in your courses? |
| What are the features you use most? |
| What did you like about Canvas? |
| What did you dislike about Canvas? |
| What do you wish Canvas had that it does not? |

Summative Assessment instrument referenced from:

[University of Texas LMS Report](http://www.utexas.edu/its/course-mgmt/governance/LMS%20Project%20Report%20and%20Recommendations-FINAL.pdf)

Appendix D

Interview questions with personal email transcripts with FSCJ Technology Team

**David Dial**

**Engineer IV – Learning Innovations: Florida State College at Jacksonville**

**Email communications from May 4, 2012**

**Me:** Do you know of a website or resource that could give me references for Canvas pricing, training, documentation, etc.

**Dial:** I don't know that there's anything out there that details pricing. Seems they are customizing it depending on the market and client. The pilot began at $10K and we've had to pay something like $25 per student to increase enrollment by 300. I believe they've given us a projection I'd what it would cost for us to adopt Canvas completely.

**Me:** Do you know where I can find technical info, sketches, graphs, and data charts?

**Dial:** Documentation, guides, video tutorials and what not can be found at <http://guides.instructure.com/>. Training is provided via web conference, generally, but they'll send trainers out for large projects or to land a contract. They also attend conferences and have their own conferences. Recently they had Canvas Con in Orlando, and they will be having Instructure Con in Salt Lake City this summer. They have information about that at [instructure.com](http://instructure.com/). I imagine their site is the best place to find graphs and what have you.

**Me:** Do you have and formative or summative evaluation plans to measure the effectiveness of Canvas?

**Dial:** We are planning to measure effectiveness through pre and post surveys of students and faculty, as well as metrics of student success, participation and interaction.

**Me:** Are we paying for training, or is it free?

**Dial:** Included in $10K contract. Don't believe it's separately itemized, but I haven't seen the contract.

**Kelly Thomas**

**Director, Technology Administration: Florida State College at Jacksonville**

**Email communication from May 9, 2012**

**Me:** Can I have access to any documentation for the price our college is or would pay for Canvas?

**Thomas:** $10,000 - Canvas LMS Pilot Environment (6-mo term) including implementation services, administrator and end user support training, and premium support for 400 users.

$1,500 - URL established: [canvas.fscj.edu](http://canvas.fscj.edu/) and $2,500 - Increase Pilot Environment from 400 to 700 users, includes all students, faculty, and support staff. In terms of future Collegewide implementation, I do not have real cost estimates yet. An agreement is being worked out through Florida Distance Learning Consortium to structure a deal based on FTE pricing. Details TBA.

**Jose Fierro, DVM, PhD**

**Associate Dean of Liberal Arts and Sciences: Florida State College- Open Campus**

**Email communications from May 10, 2012**

**Me:** Do you have any surveys or assessment tools you plan on using for Canvas? (summative and/or formative) And if so, may I have a copy or them?

**Fierro:** We do have a survey, but it has not been approved yet.  As soon as it is approved, I will be able to share it with you.